Level 1 / Level 2 GCSE (9 – 1)

MATHEMATICS

Paper 1 (Non- calculator)

Foundation Tier

Time : 1 hour 30 minutes **Paper : 1 MA1 / 1F**

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – there may be more space than you need.
- You must **show all your working.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may not be used.**

Information

- The total mark for this paper is 80.
- The marks for **each** question are shown in brackets
  – use this as a guide as to how much time to spend on each question.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1. Write the following numbers in order of size.

Start with the largest number.

$\frac{7}{10}$ $\frac{4}{5}$ 0.6 $\frac{3}{4}$

.....

(Total for Question 1 is 1 mark)

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2. Here is a list of numbers.

51 53 55 56 57

From the list, write down a prime number.

.....

(Total for Question 2 is 1 mark)

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3. Write 5.085 correct to one decimal place.

.....

(Total for Question 3 is 1 mark)

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4. Write 0.07 as a fraction.

.....

(Total for Question 4 is 1 mark)

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5. Write down the value of the 9 in the number 3092.

.....

(Total for Question 5 is 1 mark)

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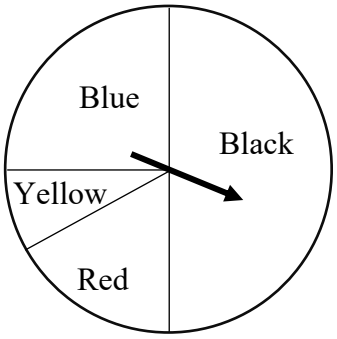
6. The diagram shows a pointer which spins about the centre of a circle.



When the pointer is spun, it stops on one of the colours.

The colours are black, red, yellow and blue.

Emily spins the pointer once.

a. Write down a word from the box that best describes each outcome.

Certain	Likely	Unlikely	Impossible

i. The pointer stops on yellow.

.....

ii. The pointer stops on a colour beginning with the letter B.

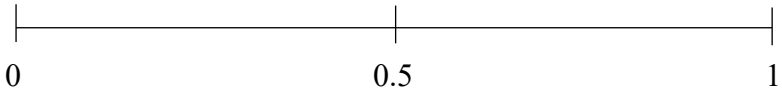
.....

(2)

b. On the probability scale, mark with a cross (×), the probability that:

i. the pointer stops on grey.

ii. the pointer stops on black.



(2)

(Total for Question 6 is 4 marks)

7. The pictogram shows information about the number of goals scored by each of four countries in the 2020 UEFA European Football Championship.

Holland	
Italy	
Belgium	
Denmark	
France	
England	

a. Italy scored 13 goals.

i. How many goals does  represent?

……

(1)

ii. Write down the number of goals scored by England

……

(1)

b. Belgium scored 9 goals.

Show this information on the pictogram.

(1)

c. Find the ratio of the number of goals scored by Holland to the number of goals scored by Denmark.

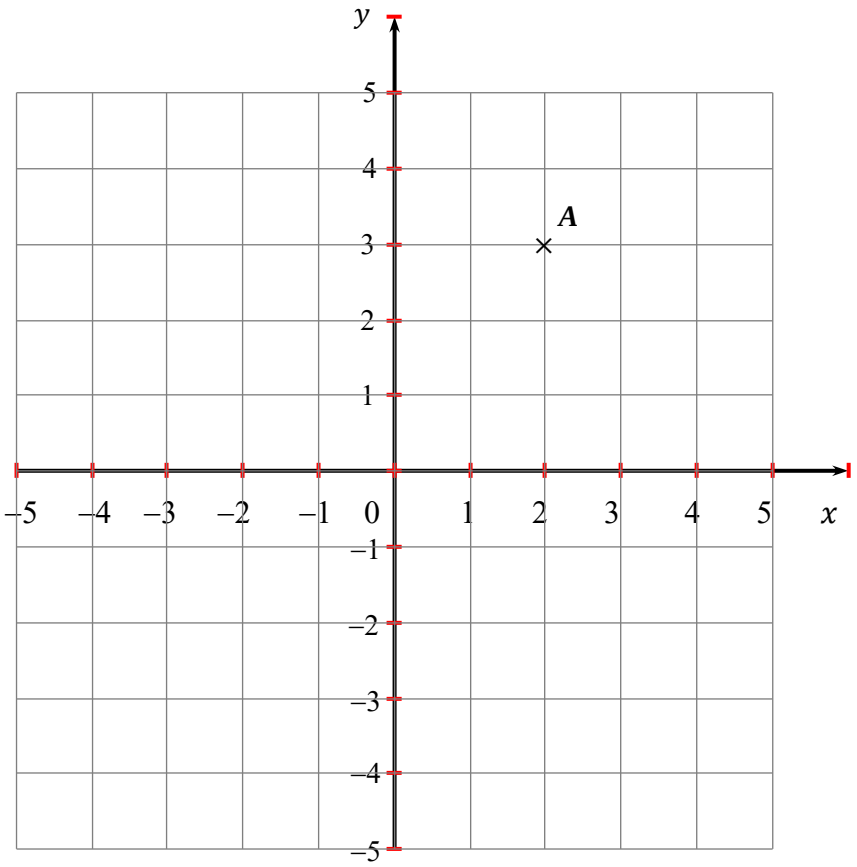
Give your ratio in its simplest form.

……..

(2)

(Total for Question 7 is 5 marks)

8.



a. Write down the coordinates of the point A.

..... , ...

(1)

b. On the grid, mark with a cross (×) the point $B(-4, -1)$.

(1)

M is the midpoint of the line AB.

c. On the grid, mark with a cross (×) the point M.
Write down the coordinates of the point M.

..... , ...

(1)

(Total for Question 8 is 3 marks)

9. Write the ratio 18 : 27 in the ratio 1 : n

.....

(2)

(Total for Question 9 is 2 marks)

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10. Kate has 30 coins in a money box.

$\frac{2}{5}$ of these 30 coins are 10 p coins.

The rest of these 30 coins are 20 p coins.

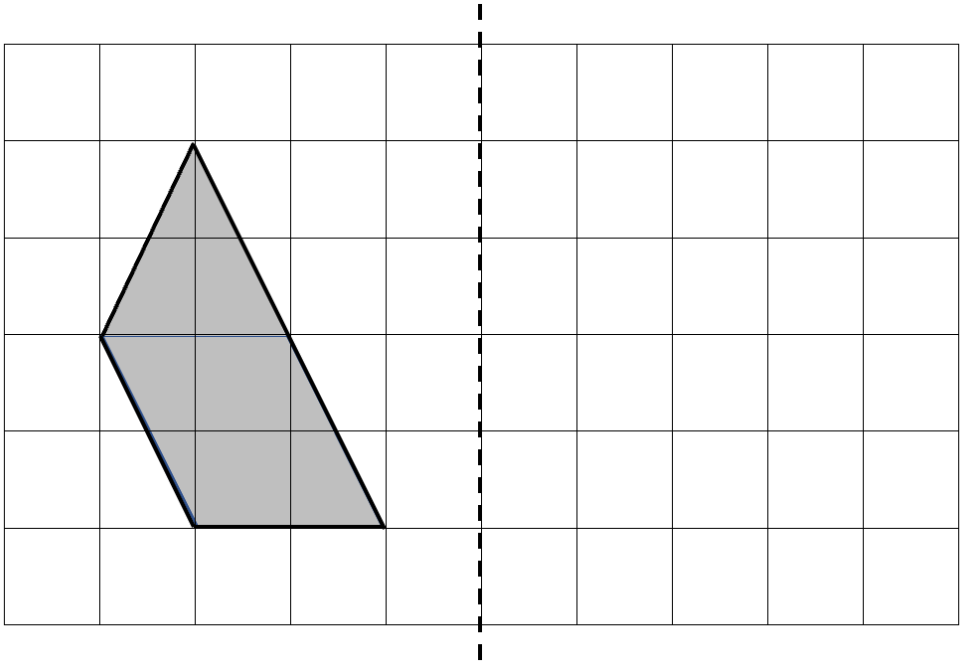
Work out the total value of 10 p coins and 20 p coins in her money box.

.....

(3)

(Total for Question 10 is 3 marks)

11.



Here is a shaded quadrilateral drawn on a grid of centimetre squares.

i. Write down the mathematical name of the shaded quadrilateral.

……..

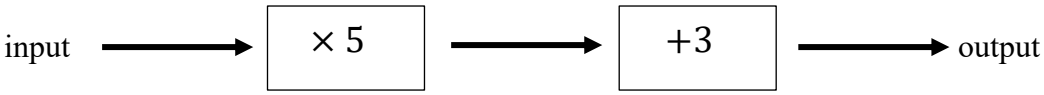
(1)

ii. Reflect the shaded shape in the mirror line.

(2)

(Total for Question 11 is 3 marks)

12. Here is a number machine.



a. Complete this table for the number machine.

Input	Output
2	… … … …
5	28
… … … …	43

(2)

b. The input number is x.
The output number is y.
Write down a formula for y in terms of x.

……

(2)

(Total for Question 12 is 4 marks)

13. The diagram shows the position of two petrol stations P and Q on a motorway.

Scale : 1 : 5 000 000

a. Find the bearing of Q from P.

.....

(1)

b. Work out the real distance between petrol station P and petrol station Q.
Give your answer in kilometres.

.....

(2)

Petrol station R is 350 km on a bearing of 060° from petrol station P.

c. On the diagram, mark petrol station R with a cross (×). Label it R.

(1)

(Total for Question 13 is 4 marks)

14. 50 workers of the factory were asked which forms of transport they use regularly from car, bus or bicycle.

21 of the workers were female.

6 of the 8 workers who used bicycle were male.

18 of the workers used bus.

9 males used car.

a. Complete the two-way table.

	Male workers	**Female workers**	**Total**
Car	9		
Bus			18
Bicycle	6		8
Total		21	50

(2)

b. Use the table to find the number of females who used buses.

.....

(1)

(Total for Question 14 is 3 marks)

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15. Liam makes lemon squash by mixing 80 ml squash with 640 ml of water.

Jon makes lemon squash by mixing 45 ml squash with 405 ml of water.

Whose squash is the stronger?

Explain your answer.

.....

.....

.....

(Total for Question 15 is 3 marks)

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16. The table shows the number of goals scored in Premier league football matches.

Goals Scored	Number of matches
0	3
1	5
2	9
3	6
4	2

Jamil said that the mode is 4.

Jamil is wrong.

a. Explain why.

……

……

……

(1)

Jamil also worked out the mean goals scored in 25 matches.

Here is his working.

$$\text{Mean} = \frac{(0\times3)+(1\times5)+(2\times9)+(3\times6)+(4\times2)}{5} = 9.8$$

Jamil made a mistake in his working to find the mean goals scored.

b. Describe the mistake that Jamil made.

……

……

……

(1)

(Total for Question 16 is 2 marks)

17. Chris makes pillar candles.

He has 8.8 kilograms of wax and uses it all to make candles.

Each pillar candle Chris makes uses 160 grams of wax.

Chris sells $\frac{3}{5}$ of the pillar candles for £15.

He then reduces this price by $\frac{1}{5}$ and sells the rest of the pillar candles.

Work out the total amount of money Chris gets by selling all the candles he made.

.....

(Total for Question 17 is 4 marks)

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18. Given that $\frac{35\times5.4}{42} = 4.5$

Work out the value of $\frac{350\times54}{4.2}$

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(Total for Question 18 is 2 marks)

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19. a. Expand $2x(x + 3)$

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(1)

b. Factorise $12q - 18p$

.....

(1)

c. Solve $9(y + 3) = 18$

$y =$.....

(2)

(Total for Question 19 is 4 marks)

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20. Work out the value of

$$2\frac{2}{9} \div \frac{2}{3}$$

Give your fraction in its simplest form.

.....

(Total for Question 20 is 3 marks)

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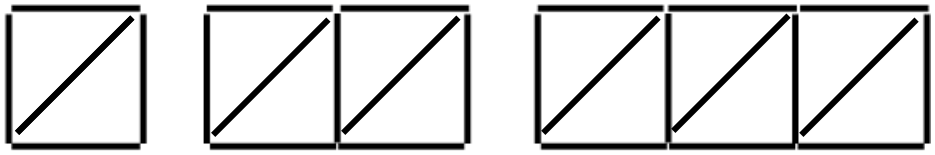
21. Here is a sequence of patterns made from sticks.



Pattern number 1 Pattern number 2 Pattern number 3

a. In the space below, draw pattern number 4.

(1)

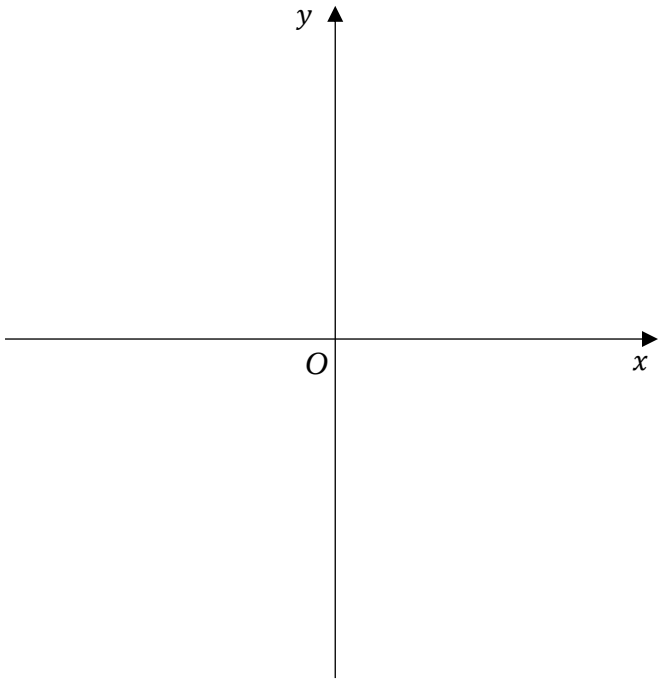
b. How many sticks are needed for pattern number 10?

.....

(2)

(Total for Question 20 is 3 marks)

22. a. Sketch the graph of $y = \frac{1}{x}$

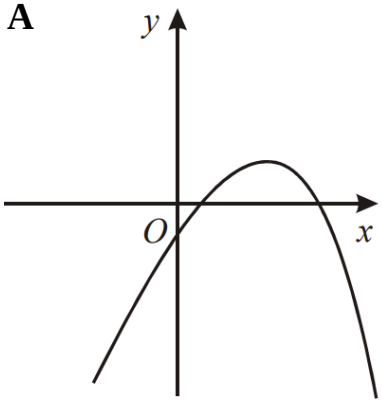


(1)

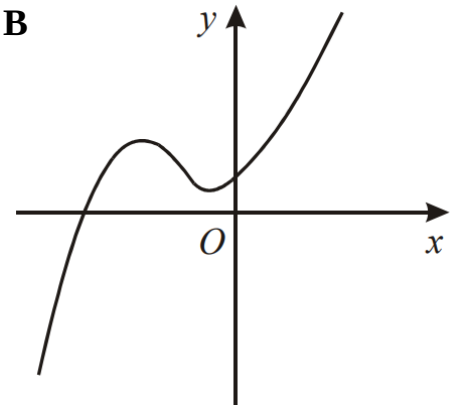
b. Match each of the equations with its graph.

Equation	Letter of graph
$y = -x^2 + 4x - 3$	
$y = \frac{1}{3}x^3 + 2x^2 + 3x + 4$	

A



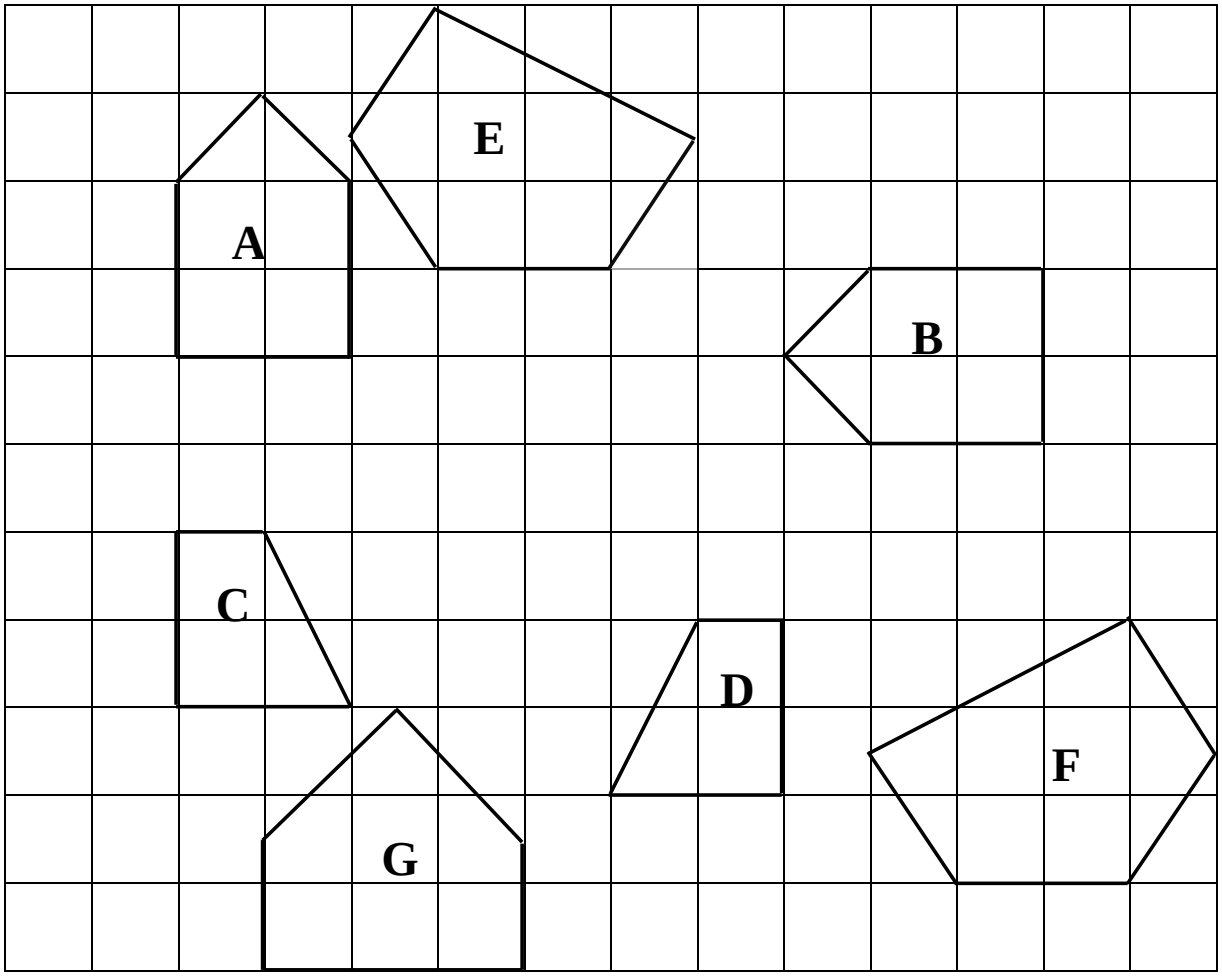
B



(1)

(Total for Question 22 is 2 marks)

23. Identify the only shape which is not congruent to any other shape in the grid below.



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(Total for Question 23 is 1 mark)

24. Kaan's weekly pay is £180 each week.

Kaan asks his boss for an increase of £20 a week.

Kaan's boss offers him a 10% increase.

Is the offer from Kaan's boss more than Kaan asked for?

You must show your working.

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(Total for Question 24 is 3 marks)

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25. 14 students took a Maths test.

The test was marked out of 100.

The table below shows the scores of 7 female students.

Lowest score	25
Median	55
Highest score	95

Here are the scores of 7 male students.

22 42 42 45 50 65 70

Use the information to compare the scores of females with the males.

Write down two comparisons.

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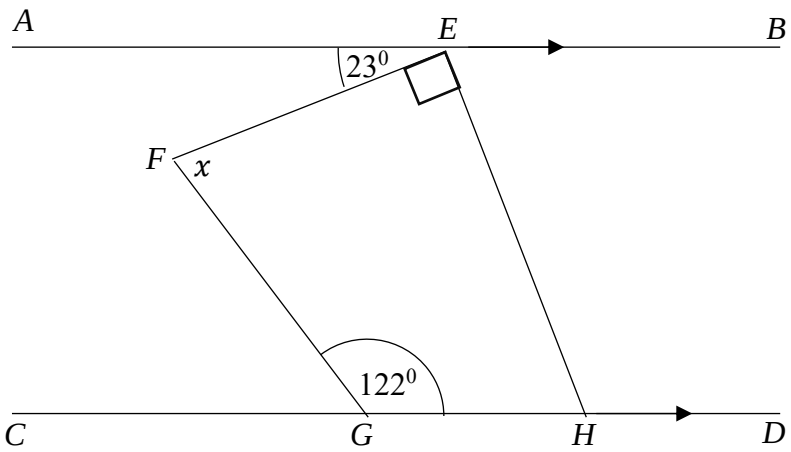
.....

.....

(Total for Question 25 is 3 marks)

26.



AEB is parallel to *CGHD*.

EFGH is quadrilateral.

Work out the size of the angle marked *x*.

You must give a reason for each stage of your working.

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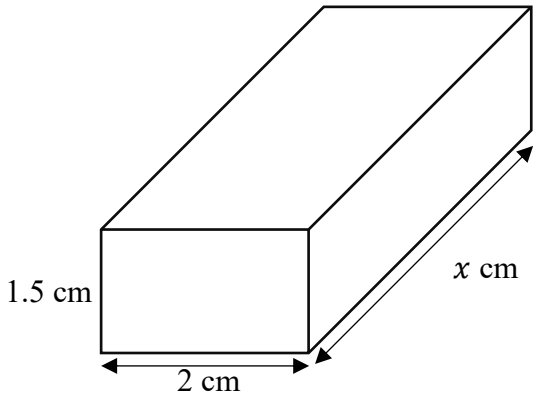
(Total for Question 26 is 3 marks)

27. The mass of a solid copper bar is 216 g.

The density of copper is ≈ 9 g/cm^3.

The gold is in the shape of a cuboid as shown below.



Work out the value of x.

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(Total for Question 27 is 3 marks)

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28. a. Write 2.8×10^{-3} as an ordinary number.

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(1)

b. Write 2000000 in standard form.

.....

(1)

(Total for Question 28 is 2 marks)

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29. Given that $p : q = 2 : 3$ and $q : r = 4 : 5$, find $p : r$

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(Total for Question 29 is 3 marks)

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30. a. Simplify $k^9 \div k^3$

.....

(1)

b. Make q the subject $p = 2q - 7$

.....

(2)

(Total for Question 30 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS